

THERMA-TRU CORPORATION ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A
S830010J-000218-10379, SIDE-HINGED SINGLE DOOR SYSTEM WITH FULL LITE

REPORT NUMBER

I9173.01-113-11-R1

TEST DATE

12/04/18

ISSUE DATE

01/03/19

REVISION 1 DATE

04/12/22

PAGES

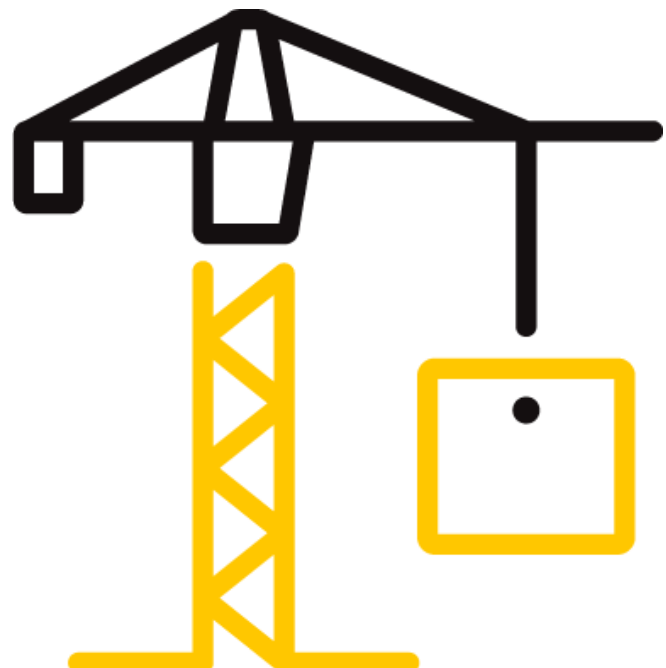
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DOCUMENT CONTROL NUMBER

ATI 00274 (07/24/17)

RT-R-AMER-Test-2756

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TEST REPORT FOR THERMA-TRU CORPORATION

Report No.: I9173.01-113-11-R1

Revision 1 Date: 04/12/22 Date: 01/03/19

REPORT ISSUED TO

THERMA-TRU CORPORATION

118 Industrial Drive
Edgerton, Ohio 43517

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Therma-Tru Corporation to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Sean G. Close	REVIEWED BY:	Kurt A. Golden
TITLE:	Technician Team Leader Acoustical Testing	TITLE:	Senior Project Lead Acoustical Testing
SIGNATURE:		SIGNATURE:	
DATE:	04/12/22	DATE:	04/12/22

SGC:jmcs

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	S830010J-000218-10379
TYPE	Side-hinged single door system

OPTION I9173.01A

GLAZING (Nominal Dimensions)	1" IG (1/8" tempered, 3/4" air space, 1/8" tempered), Sealed with duct seal on both sides
TEST CONDITION	Inoperable
DATA FILE NO.	I9173.01A
STC	30
OITC	26

OPTION I9173.01A2

GLAZING (Nominal Dimensions)	1" IG (1/8" tempered, 3/4" air space, 1/8" tempered)
TEST CONDITION	Operable
DATA FILE NO.	I9173.01A2
STC	29
OITC	25

COMMENTS

Whether the tested door system utilizes wood or composite stile edges, the ratings would remain unchanged.

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SECTION 3

TEST METHODS

The specimens were evaluated in accordance with the following

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4

SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

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SECTION 5 EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3*	04/18
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	09/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64903	05/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65106	03/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64905	03/18
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	64906	03/18
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	65968	01/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65586	02/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65969	04/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT00652	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/18
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00603	03/18
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/18
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/18

*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m ³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m ³	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Sean G. Close	Intertek B&C
Jear N. Mutunda	Intertek B&C

SECTION 7

TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure level measurements were made simultaneously in receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

SECTION 8

ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating

To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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SECTION 9

SPECIMEN DESCRIPTION

	FRAME
SIZE	37-9/16" by 98"
THICKNESS	4-5/8"
CORNERS	Butted
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL	Aluminum
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A
SPECIMEN WEIGHT (lbs)	24

COMMENTS

The leaf was 36" by 95-5/8" by 1-3/4" thick. The daylight opening size was 21" by 78-3/4".

LEAF LAYERS (OUTSIDE TO INSIDE)	LAYER DESCRIPTION (MATERIAL AND THICKNESS)
1	0.084" Fiberglass skin
2	1.529" Polyisocyanurate core
3	0.082" Fiberglass skin

N/A-Not Applicable

COMMENTS

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MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.975"
SPACER TYPE	Butyl

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.121"	0.740"	0.114"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Tempered	Air*	Tempered
LAMINATE MATERIAL	N/A	N/A	N/A
GLAZING METHOD	Interior		
GLAZING MATERIAL	Foam tape		
GLAZING BEAD MATERIAL	Vinyl		

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	1" Kerf mounted foam-filled leaf gasket	1 Row	Head and jambs
	1-1/8" Foam pad	2	Corner of each jamb at sill
	7/16" Diameter hollow bulb gasket with 1/4" quadruple fin sweep	1	Bottom rail
HARDWARE	Hinge	3	Hinge stile
	Lock set	1	Lock stile
	Dead bolt	1	Lock stile
DRAINAGE	Slope sill	1	Sill

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft²)
113	4.43

* - Stated per Client/Manufacturer, N/A-Not Applicable

Photographs are included in Section 11.

The client did not supply a report drawing of the test specimen.

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SECTION 10

TEST RESULTS

I9173.01A DATA

SPECIMEN AREA	2.37 m ²	RECEIVE TEMP.	20.9 °C	SOURCE TEMP	21.4 °C
TECHNICIAN	Sean G. Clos	RECEIVE HUMIDITY	51%	SOURCE HUMIDIT	52%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	36.2	5.3	104	79	22	2.31	-
100	34.0	5.3	105	80	22	1.57	-
125	34.9	6.3	105	80	20	1.29	0
160	40.1	5.7	107	84	19	0.85	0
200	37.8	5.1	106	84	18	0.65	2
250	29.4	5.6	103	76	23	0.42	0
315	24.4	6.0	103	75	24	0.49	2
400	22.7	6.1	102	71	27	0.76	2
500	19.5	6.5	102	67	30	0.75	0
630	18.7	6.3	101	64	33	0.67	0
800	15.8	6.5	100	63	33	0.28	0
1000	11.0	6.6	102	63	34	0.29	0
1250	9.8	7.1	100	62	33	0.30	1
1600	7.3	7.5	100	69	26	0.21	8
2000	5.2	7.9	100	65	30	0.15	4
2500	4.9	8.9	101	56	39	0.18	0
3150	6.5	10.2	99	52	41	0.32	0
4000	6.2	12.7	97	57	33	0.19	1
5000	7.4	16.0	98	53	37	0.29	-
STC RATING	30 (Sound Transmission Class)						
DEFICIENCIES	20 (Sum of Deficiencies)						
OITC RATING	26 (Outdoor-Indoor Transmission Class)						

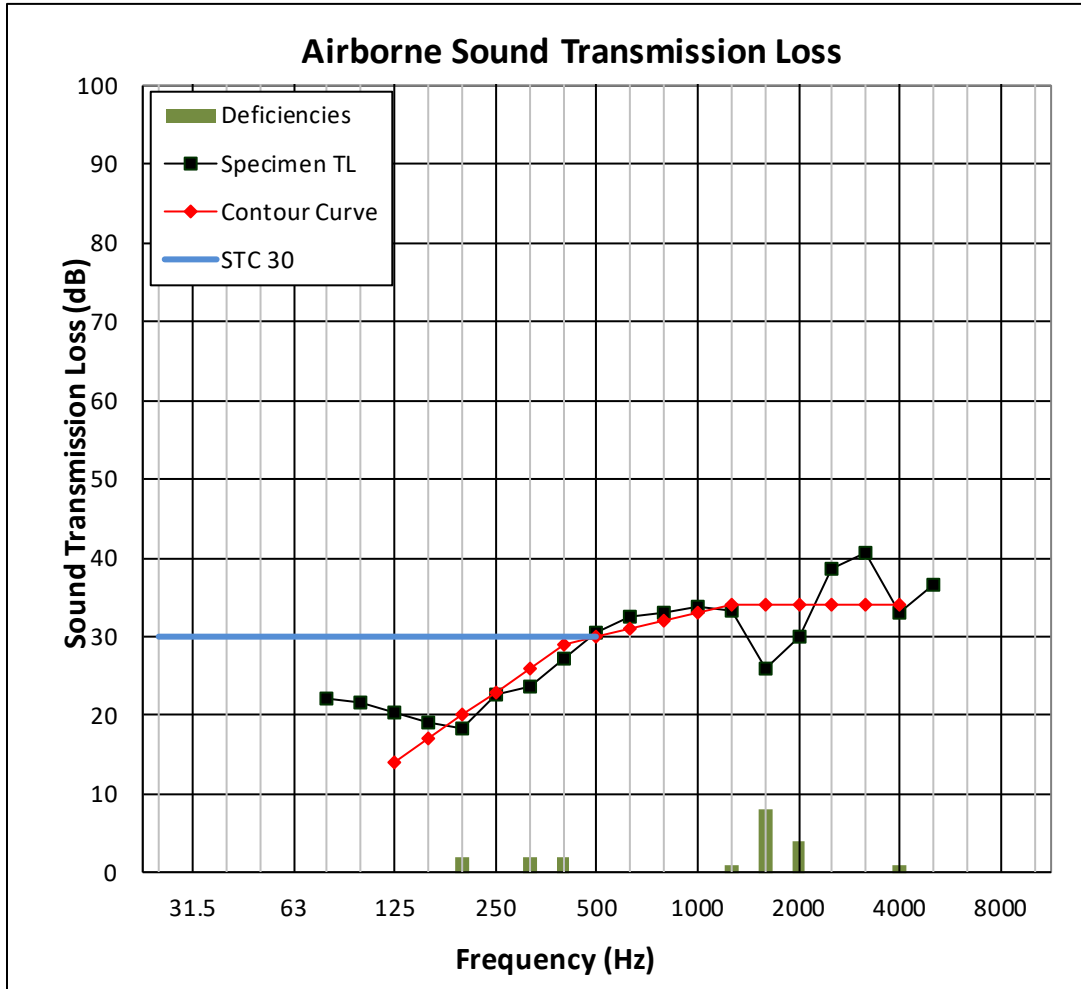
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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I9173.01A GRAPH



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I9173.01A2 DATA

SPECIMEN AREA	2.37 m ²	RECEIVE TEMP.	21.2 °C	SOURCE TEMP	21.4 °C
TECHNICIAN	Sean G. Clos	RECEIVE HUMIDITY	48%	SOURCE HUMIDIT	47%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	37.6	4.9	104	80	21	2.10	-
100	34.7	5.1	105	80	22	1.60	-
125	35.0	5.9	105	81	20	1.31	0
160	40.8	5.4	107	85	18	0.99	0
200	38.8	5.2	106	84	19	0.62	0
250	30.5	5.8	102	77	22	0.43	0
315	24.7	5.8	103	75	24	0.55	1
400	21.2	6.1	102	71	27	0.73	1
500	17.7	6.5	102	68	30	0.79	0
630	18.4	6.3	101	66	31	0.65	0
800	14.8	6.5	100	66	29	0.34	2
1000	11.4	6.7	101	68	29	0.34	3
1250	8.3	7.2	100	66	29	0.36	4
1600	7.2	7.6	100	69	25	0.23	8
2000	5.3	8.1	100	66	29	0.18	4
2500	5.9	9.1	100	59	35	0.17	0
3150	8.3	10.6	99	55	38	0.31	0
4000	7.3	13.3	97	57	32	0.22	1
5000	7.7	16.9	97	54	35	0.29	-
STC RATING	29 (Sound Transmission Class)						
DEFICIENCIES	24 (Sum of Deficiencies)						
OITC RATING	25 (Outdoor-Indoor Transmission Class)						

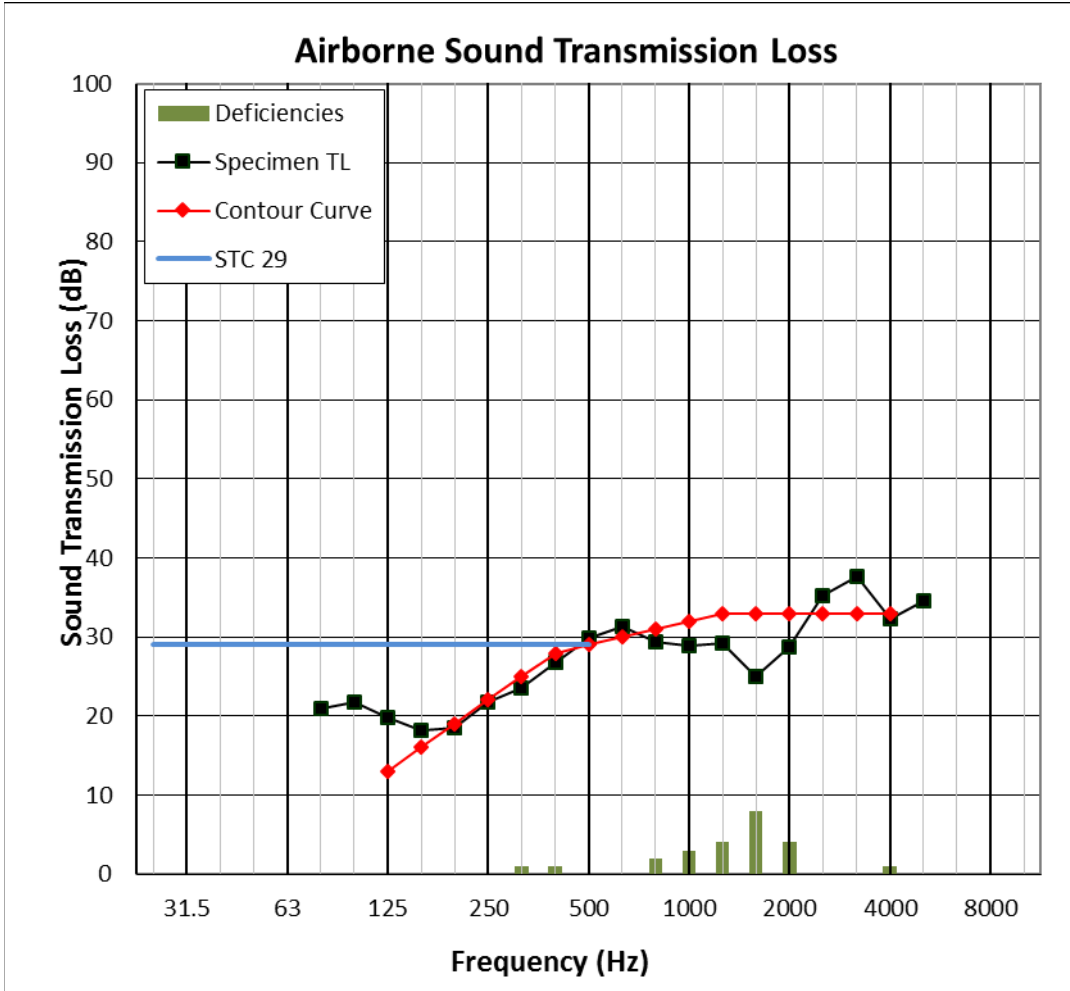
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I9173.01A2 GRAPH



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SECTION 11

PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Specimen



Photo No. 2
Source Room View of Installed Specimen



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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/03/19	N/A	Original Report Issue
1	04/12/22	3, 7	Added Comments